

METHOD FOR FABRICATING A TRENCH CAPACITOR

Abstract

A method for making a deep trench capacitor is disclosed. A substrate with a deep trench formed therein is provided. The trench is doped to form a buried plate electrode serving as a first electrode of the deep trench capacitor at a lower portion of the trench. A node dielectric is formed on interior surface of the trench. Subsequently, the trench is filled with a first conductive layer and then recessed to a first depth. A collar oxide layer is then formed on vertical sidewall of the trench on the first conductive layer. The trench is filled with a second conductive layer and again recessed to a second depth. A pair of symmetric spacers is then formed on the vertical sidewall of the trench. A third conductive layer is deposited on the second conductive layer and on the symmetric spacers, and fills the trench. The trench is recessed to a third depth.